

Remarks

In the present response, claims 1-12 are presented for examination, and claims 13-38 are withdrawn.

Double Patenting

Claims 1-12 are provisionally rejected under the judicially created doctrine of double patenting over claims 1-3 and 8-16 in application serial number 10/827,370. Since this is a provisional rejection, Applicants will consider filing a terminal disclaimer upon notice of allowable subject matter.

Claim Rejections: 35 USC § 102(e)

Claims 1-5 are rejected under 35 USC § 102(e) as being anticipated by USPN 7,054,257 (Binnig). These rejections are traversed.

Claims 1-5 recite elements not taught or even suggested in Binnig. Some examples are provided below for independent claim 1.

As one example, independent claim 1 recites a medium that is supported on an electrically conductive substrate. The claim then recites that an electrical field “is generated between the electrically conductive substrate of the medium and the cantilever.” Binnig does not teach or suggest these recitations.

Binnig primarily teaches an AFM (Atomic Force Microscope) device that uses heat, not an electrical field, to perform read operations. Changes in temperature are detected between the probe and the storage field or medium to detect the presence of a logical one or zero (see Binnig at column 7, lines 10-30).

In direct contrast to the primary teachings in Binnig, claim 1 recites an electrical field that is generated between an electrically conductive substrate and the cantilever. Binnig does state that the storage medium comprises a silicon substrate with a polymer surface (see Binnig at column 6, lines 62-64). This silicon substrate, however, is not used to generate an electrical field with the probe. Instead, heat (not an electrical field) is used in Binnig to perform read operations. As such, Binnig does not teach or suggest a circuit that responds to changes in current through the device caused by changes in an electrical field that is generated between the substrate and the cantilever.

At column 18, lines 46-67, Binnig teaches a read-sensing system using another proximity sensing mechanism besides heat. Specifically, Binnig teaches two electrodes. One electrode is “disposed on the support structure” and another electrode is provided on the lever (emphasis added: see Binnig at column 19, lines 51-54). Air between the two electrodes serves as a dielectric to provide a variable capacitances as the distance between the two electrodes changes (see Binnig at column 19, lines 63-67).

The teachings at column 19, lines 46-67 of Binnig are very different than the recitations of claim 1. For example, the electrode in Binnig is formed “on” the substrate. By contrast, claim 1 recites that the electrical field is generated between the substrate and the cantilever. Again, Binnig uses an electrode on the substrate, not the substrate itself. Furthermore, Binnig uses “electrodes” to provide a variable capacitance. By contrast, claim 1 recites using a “substrate” of the medium to generate an electrical field. The electrode in Binnig is not a substrate. Furthermore, the medium in Binnig is not supported on the electrode.

Anticipation under section 102 can be found only if a single reference shows exactly what is claimed (see *Titanium Metals Corp. v. Banner*, 778 F.2d 775, 227 U.S.P.Q. 773 (Fed. Cir. 1985)). For at least these reasons, claims 1-5 are allowable over Binnig.

Claim Rejections: 35 USC § 103(a)

Claims 6-9 and 11-12 are rejected under 35 USC § 103(a) as being unpatentable over USPN 7,054,257 (Binnig) in view of USPN 6,477,132 (Azuma). These rejections are traversed.

As explained above, Binnig fails to teach or even suggest all of the elements of independent claim 1. Azuma fails to cure these deficiencies. For at least the reasons given with respect to independent claim 1, dependent claims 6-9 and 11-12 are allowable over Binnig in view of Azuma and Mamin.

Claim Rejections: 35 USC § 103(a)

Claim 10 is rejected under 35 USC § 103(a) as being unpatentable over USPN 7,054,257 (Binnig) in view of USPN 6,477,132 (Azuma) and USPN 5,729,026 (Mamin). This rejection is traversed.

As explained above, Binnig fails to teach or even suggest all of the elements of independent claim 1. Azuma and Mamin fail to cure these deficiencies. For at least the reasons given with respect to independent claim 1, dependent claim 10 is allowable over Binnig in view of Azuma and Mamin.

CONCLUSION

In view of the above, Applicants believe that all pending claims are in condition for allowance. Allowance of these claims is respectfully requested.

Any inquiry regarding this Amendment and Response should be directed to Philip S. Lyren at Telephone No. 832-236-5529. In addition, all correspondence should continue to be directed to the following address:

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Respectfully submitted,

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